

WATER Center

Environmental Services Department

A decorative graphic on the left side of the page. It consists of two rows of colored circles. The top row has three circles: blue, yellow, and green. The bottom row has three circles: teal, light blue, and grey. To the right of these circles, a light blue line winds diagonally across the page, resembling a trail or a river.

TRAIL GUIDE

**Interpretive guide for the numbered
posts along the creek-side trail in
Herman Hill Park.**

Text and Images By Nathan Fisher and Libby Albers

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Look!

Watch for these “bubbles” on a few of the Trail Guide’s pages. Look, listen, and touch to get your senses involved!

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Wichita's Challenge

In 1991, routine testing detected groundwater pollution underneath downtown Wichita. The 2600-acre area was dubbed the “Gilbert-Mosley Site” as these were the two streets that crossed at the point of first discovery. Later investigations broadened the site boundary to 3850 acres (or about the size of Andover, Kansas!). Tests found volatile organic compounds in the groundwater as a result of years of industrial and commercial activities in the area.

Implementing the Solution



Photo by Gavin Peters

On October 16, 2003, the Wichita Area Treatment, Education & Remediation (WATER) Center, the treatment facility for the Gilbert-Mosley Site, celebrated its grand opening.

The WATER Center's remediation complex includes five and one-half miles of piping, thirteen extraction wells, and a venturi air stripping system operated to limit the spread of the contaminated groundwater.

Awareness and Education

After treatment, the remediated water flows through aquariums, a creek, and wetlands before entering the Arkansas River. Two aquariums are home to native species such as catfish, sunfish, and suckers.



The trail along the creek provides visitors with viewing opportunities for wildlife attracted to the newly-created habitat as well as demonstrative exhibits on wetlands, buffer strips, and non-point source pollution.

A one-of-a kind venture, the WATER Center's exhibit hall offers a hands-on, interactive environmental center dedicated to learning about water, water conservation, and stewardship. The facility reaches far outside the community affected by the Gilbert-Mosley contamination to provide water education to all visitors.

The City of Wichita is proud to have taken the lead in assessing and cleaning up the Gilbert-Mosley contamination, and, in the process, to have created an award-winning groundwater treatment and environmental education center that turned a significant environmental liability into a community asset that fosters a learning atmosphere for citizens and visitors alike.



Have you ever...

"...walked down a nature trail and wondered what that certain wooden box is on that pole, or why such a large rock sticks out in the stream like that? Some of the things on the WATER Center's trail arouse that kind of curiosity.

My Boy Scout Eagle Project consisted of labeling the WATER Center's nature trail with numbered wooden posts and writing a trail guide explaining the plants, animals, or geology viewed from each post.

Starting this project required careful planning. The first thing that I needed to do was to select the areas for the posts. The areas where the posts are located are vantage points that, when standing near them, visitors can observe several types of ecology. The next step required many walks through the trail, collecting information and identifying the many different species of plants, animals, habitats, and geology. I then compiled the facts and information into a step-by-step numbered trail guide that corresponds to the numbered posts.

I hope that my part of the WATER Center will be enjoyed by visitors to the park who will stroll along the sidewalk, taking their time reading and observing the ecology of this area."

Recreational Trails Program



The National Recreational Trails Act of 1991 directs the Secretary of Transportation to allocate money to the States for providing and maintaining recreational trails. It also establishes a National Recreational Trails Advisory Committee to review use of allocated moneys by the states and recommends federal policy changes.

Partnership

In Kansas, the Recreational Trails Program (RTP) is administered by the Kansas Department of Wildlife and Parks (KDWP) and the Federal Highway Administration (FHWA).

Funding

This interpretive trail guide and the trail posts were funded through the RTP by a 2007 Recreational Trail Grant.





Water Supports Life

Moments ago this water was underneath downtown Wichita.

After passing through pumps, pipes, the WATER Center's pollution treatment system, fountains, and the aquarium, this water is finally entering a natural

environment. Now clean and above ground, this water supports an ever-growing diversity of plants and animals.

Adapted for Water

Wetland plants such as cattails, iris, and arrowhead thrive in soggy soil.

Not every plant can live so close to water.

These water-loving (hydrophytic) plants, have unique tools to keep them alive. Shallow or exposed roots, floating leaves, hollow root sacs, and "buttressed" trunks are all special tools that these plants use to get air to their roots.

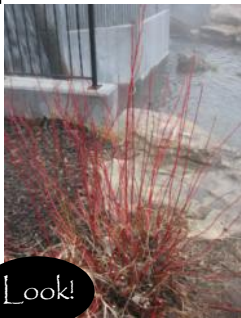




Color

Winter: a season of hidden color.

The Redtwig Dogwood stands out in the midst of the drab gray winter scenery. Even though the dogwood loses its leaves, its blazing red branches make this shrub easily identifiable.



Look!

Do you see signs that muskrat have visited this shrub?

Duck, Duck, Goose

During any season, the most common bird seen in the WATER Center's creek is the mallard duck.

In the winter, mallards are attracted to the warm water in the creek. By summer, only a few mated pairs will remain in the park to nest and raise their young.



Far less sociable is the Canada goose. Although their numbers may swell to 25,000 in the cold months, the majority of Wichita's visiting winter geese stay close to larger bodies of water like the Arkansas River.



2

Willows

Willow trees thrive in wet soil.

Along the creek, there are three kinds of willows. From this stop on the trail, you can

see a peach-leaved willow, black willows, and sandbar willows.

How can you tell them apart?

The black willow is one of the largest willows in Kansas and its trunk leans over as it grows.



The peach-leaved willow has wide leaves, yellow stems, and may also lean over when full grown.

The sandbar willow loves to grow in crowded groups of trees about six-feet tall.

Look closely at the base of the willow trees. Some have been gnawed down in previous seasons by beaver.

Look!



Habitat Highlight— Winter Food

The Illinois Bundleflower is an important food during all seasons.

This plant's small brown seeds are packed with protein. Small rodents, quail, and pheasant rely on the Illinois bundleflower's seeds for winter food.

The seeds are so delicious that the Illinois bundleflower may disappear from an area if the population of rodents is too high.

Cattle, as well as wildlife, enjoy eating the Illinois bundleflower. Cattle prefer the bundleflower when it is green and lush. No bundleflower in a pasture might be a sign that the area is overgrazed. Look for bundleflower and other wildflowers, and you'll find a healthy habitat.





3

Green!

It's summertime: the sun is shining, the weather is hot, and water is flowing down the stream.

Combine these things and “green” starts growing.

The green blobs you see start off as a single cell. The cell divides and divides until long chains form. The chains form filaments, or long strings that look like wool or hair. The strings then clump together and form big floating mats.



What could it be?

It is green, slimy, and seems to stick to everything in the water. Many people think it looks gross and call it pond scum, but algae is much more than that.

Algae is an integral part of this water ecosystem. Filamentous algae provides an important habitat for small invertebrates, or pond bugs. These small creatures are a good food source for fish. Even when algae dies, it is used as food for fungi and small insects.



Habitat Highlight— Winter Shelter

Beaver move up from the Arkansas River to the **WATER Center's** creek during the late fall.

During the fall, beaver are looking for a habitat where they can cache, or store, food for the winter. They also need a safe place to build a den. In Kansas, it is common for beaver to build tunnels in the side of the riverbank rather than build a stick lodge in the middle of a pond.

Once they find a good spot, the beaver begin chewing down the small trees growing along the creek. After eating the nutritious cambium layer, the stripped limbs are packed together with mud to create a dam. By raising the water level in the pond, the beavers ensure plenty of space for their winter food store and den.





4

Nest Builders

Male sunfish build nests along the bottom of the creek.

Bluegill sunfish are easily recognized by their round shape and the dark spot on the flap covering their gills.

Look!

Bluegill often hide in the cool vegetation at the bottom of ponds. During their breeding season, the territorial male sunfish hollow out nests along the bottom of the creek. Using their tails, they wave away the mud until only the pebbles at the bottom of the creek remain. Once the nest is ready, the male will let a female swim in and lay her eggs.

Female bluegill may carry up to 50,000 eggs! The eggs are very tiny and look like little, clear dewdrops. A couple of days after they are laid, the eggs will hatch into tiny bluegill. A week later, the little fish are ready to leave the nest to explore their pond.





A Home For Many

You may have seen it before: a dead tree leaning halfway into a river.

It may not seem like much, but it is actually a home for many different animals.

Dead trees are often removed because they present a safety hazard or they don't quite fit in with their surroundings. But removing a dead tree removes an important shelter for wildlife.

A solution to this problem is to attach wooden boxes to living trees, fences, on posts, or even on the side of a garage. These boxes provide the same type of nesting cavity as found in an old, hollow, dead tree.

An example of one kind of "nesting box" can be seen from this post. This style of box may provide a home for wood ducks, screech owls, squirrels, snakes, and other critters.

Can you imagine what other animals use the hollow spaces in trees?





5

Riffles, Runs, and Pools

Streams with a variety of habitats support a diverse community of aquatic creatures.

Some invertebrates prefer “riffles”—fast, narrow, turbulent sections of a stream. These animals may cling to or shelter behind rocks in the rushing water. Along the trail, look under the wooden bridges for an example of a riffle.

In smaller streams, debris such as tree trunks pile up and clog the stream, backing up the water to form a pool.

“Runs,” or fast moving deep water, attract other creatures.

Flowing constantly, streams are always changing. As they flow into rivers, and rivers flow to the sea, they pick up sediments and plants and move them downstream. Sediments pile up to form sandbars and deltas, which are like small islands in the water. These islands may be invisible during a flood.





Miniature Habitat

Hackberry tree leaves are known for having small galls on them. These galls are small bumps that seem to grow all over the leaves. Each little gall has a developing insect inside called a psyllid (pronounced sill-id) or “jumping plant louse.”



A hackberry gall psyllid, *Pachypsylla* sp. (Homoptera: Psyllidae), nymph.

Photo by Drees.

<http://insects.tamu.edu/fieldguide/aimg92.html>

The tiny insects grow up to look like miniature cicadas. In Kansas, these small creatures usually hatch out of their tiny habitat in September.



A hackberry gall psyllid, *Pachypsylla* sp. (Homoptera: Psyllidae), adults.

Photo by C.L. Cole.

During the wintertime psyllids may hide in small cracks in the bark of the hackberry tree. In the spring, the psyllids will lay their eggs in the undersides of the hackberry's leaves.



6

Diversity

From this post you can see a variety of different types of plants on the land as well as in the water.



Coreopsis grandiflora

Look!

You might be able to spot the light purple and pale leaved ironweed that blooms in the late summer. Look closely! Growing in the lower stems of the switchgrass is bindweed - easily visible with its bright white flowers.




Growing at the edges of the water are cattails, watercress, water primrose, and penny wort. By midsummer, these plants will have choked and narrowed this stream down to a trickle.



Where Are They?

Often animals are not seen along the trail, but can you find signs that they were here?

Look for tracks, scat (poop!), nests, hair, and feathers to determine what creatures live in Herman Hill Park.



Snow provides a unique opportunity for observing animal tracks. These tracks were left by geese, a rabbit, and a raccoon.





Rushes Are Round And Sedges Have Edges!

This little rhyme helps people identify some of the most common plants in a stream ecosystem.

Bulrushes can often be found on the edges of small streams and ponds. The plant is made up of a long tubular stem with a seed pod on its end. Sedges also grow in the same area but resemble grass more than a tube—some even have a triangular stem.

Arrowhead

The arrowhead lily has three points on each of its leaves. Each leaf comes from a cluster at the base of



the plant. The leaves can grow over four feet high! Arrowhead flowers are often white but may also be pink in color. Ducks love to eat the seeds and the large tubers in the ground, which help the plant spread rapidly.





A Mammal's Retreat

Loose piles of leaves provide camouflage and winter shelter for mammals.

Eastern cottontail rabbits are known to hide along this part of the stream bank. Their speckled gray and brown fur blends in perfectly with the dried tree leaves. The Eastern cottontail rabbit will hold very still, hoping that you don't spy it. This mammal as well as squirrels and mice in the park are favorite foods of the park's biggest predators—hawks and owls.

When can you see it?

The Eastern cottontail is both a crepuscular (comes out during the sunrise and sunset) and a nocturnal (comes out at night) animal. The best time to see this critter during your park visit is on a dark cloudy day.

Look!

Look for an example of the Eastern cottontail's footprints on page 19 of this trail guide.



Prairie Trees

These trees have special tools to survive living on the prairie.

The cottonwood is Kansas' State Tree. One of the cottonwood tree's survival adaptations is its seeds. Strong Kansas winds can send these fluffy seeds for miles

at a time, spreading new trees everywhere. Besides that, cottonwoods can survive flooding by using the cracks and pores in their bark to breathe. Having bark resistant to fire also helps these trees survive prairie fires during droughts.

Call Of The Wild

A location like this is a great place to hear bird calls throughout the day.

Listen!

- In the morning listen for the “cheer-up” call of robins.
- In the heat of the day, listen for the high-pitched “killdeer” call of the killdeer and the caw of the crow.
- In the evening, the chirp-buzz of the nighthawk swooping about the sky fills the air.
- In the dark of night, you may hear the hoot of a great horned owl.



Whose Nest?

Winter is a great time to look for nests—there are no leaves on the trees so the homes are easy to see.

Even though some of their owners have migrated away or are using other places to spend the winter, you can still identify whose nest is whose.

Look!

A squirrel's nest is very large, about the size of a basketball, and is mostly made up of leaves. There can be multiple nests in a tree due to parasites—the squirrel will move back and forth between the nests to avoid be nibbled on by the irritating bugs .

A wren's nest is small, and is made up of a sticks, grass, and mud. They are about the size of a small bowl.

Robins' nests are slightly larger and are mostly made of very neatly weaved sticks. Most of the unused nests end up on the ground after strong gusts of Kansas wind.



Soggy Supermarket

A stream can have more nutritional benefits than you may think.

Besides fish, what other foods could a person find in a creek, river or a wetland?



The answer can be found in the nearby plants.

Watercress is a very abundant plant, which favors shallow, cold water in streams. This desirable plant can be found in some supermarkets.



Another edible plant in this stream is the cattail. This is a very common plant and is very easy to identify. Cattails have very hard, brown heads that turn into fluff when you pull them apart. The carbohydrate-rich roots have so much starch they could be considered “nature’s pasta.”



Decomposers

Thousands of tiny creatures are right in front of you.

Look!

Turn over submerged leaves, rocks, and plants and you may see one of the creek's most abundant creatures - the scud.

Scuds are tiny cold-water crustaceans that are pale brown or yellow and look like miniature shrimp. They are nocturnal and don't like the light, so look *under* the leaves in the stream to find them.

Feeling Brave?

Pick one up. They tickle on your hand much like a "roly-poly." Don't worry, they don't bite!

Scuds are omnivorous scavengers. They will eat both dead plants and animals.

Scuds have a great sense of touch, which really helps them find their food in the dark!



Photo by Peter Chen



10

History Flows By

The Arkansas River, in various spellings, has appeared on maps for at least 300 years.

Depending on the year the map was made, this river flowed through a variety of territories.

Standing where you are now:

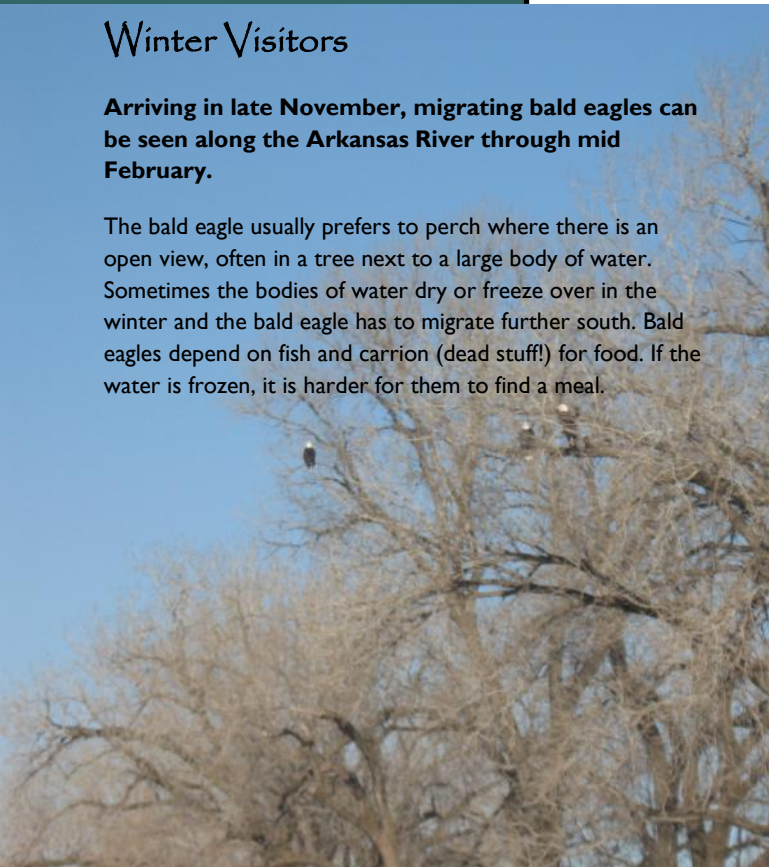
- In 1703, a map drawn by Guillaume de L'Isle showed the **River de Acansa** flowing through “Floride.”
- By 1711, Herman Moll had included the **Acansa River** as part of Louisiana.
- In 1814, the **Arkansaw River** flowed through the Missouri Territory, according to the map created by the infamous explorer, Samuel Lewis.
- Less than a decade later, John Melish’s 1821 map showed this portion of the **Arkansas River** as part of “Arkansaw.”
- By the next year, a map by J. Finlayson clearly puts this part of the **Arkansas River** in the “United States.” However, if you were to travel to Dodge City, Kansas, the Arkansas River acted as the border between the United States and Mexico.



Winter Visitors

Arriving in late November, migrating bald eagles can be seen along the Arkansas River through mid February.

The bald eagle usually prefers to perch where there is an open view, often in a tree next to a large body of water. Sometimes the bodies of water dry or freeze over in the winter and the bald eagle has to migrate further south. Bald eagles depend on fish and carrion (dead stuff!) for food. If the water is frozen, it is harder for them to find a meal.





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Administration

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